Diagnostic Ophthalmology

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History and clinical signs

A 2-year-old, male German shepherd dog was referred to the Western College of Veterinary Medicine because the owners noted that the dog had had signs of visual impairment for several months. The direct and consensual pupillary light, palpebral, and oculocephalic reflexes were present bilaterally. Schirmer tear test (Schirmer Tear Test Strips; Alcon Canada, Mississauga, Ontario) values were 22 mm/min in both eyes. The intraocular pressures were estimated with an applanation tonometer (Tonopen XL; Biorad Ophthalmic Division, Santa Clara, California, USA) and were 23 mm Hg and 17 mm Hg in the right and left eye, respectively. The pupils were dilated with tropicamide (Mydriacyl; Alcon Canada). Biomicroscopic (Osram 64222; Carl Zeiss Canada, Don Mills, Ontario) examination revealed significant anterior segment abnormalities that were bilateral and symmetrical (Figure 1A and 1B). Indirect ophthalmoscopic examination (Heine Omega 200; Heine Instruments Canada, Kitchener, Ontario) was completed. Portions of the posterior segment of each eye could be examined through the clear perimeter of each lens and no significant posterior segment abnormalities were noted. Fluorescein staining of the ocular surfaces was negative bilaterally.

Discussion

Our diagnoses were bilateral lenticular coloboma and cortical cataracts. The age of onset could not be confirmed. However, given the signalment, history, and presence of lenticular colobomas and zonular agenesis, our diagnoses were congenital cataracts and lenticular maldevelopment. On our advice, ocular ultrasonography was carried out to thoroughly evaluate the posterior segments of both eyes, because persistent hyperplastic primary vitreous, patent hyaloid arteries, and persistent tunica vasculosa lentis have been associated with congenital cataracts. No abnormalities were noted in either eye. Electroretinography was completed and revealed that the a- and b-waves were within normal reference ranges. The owner was advised that the eyes should undergo complete phacoemulsification and intraocular lens implantation. They requested a reexamination in 6 months' time; they continued

What are your diagnoses, and further diagnostic and therapeutic plans?

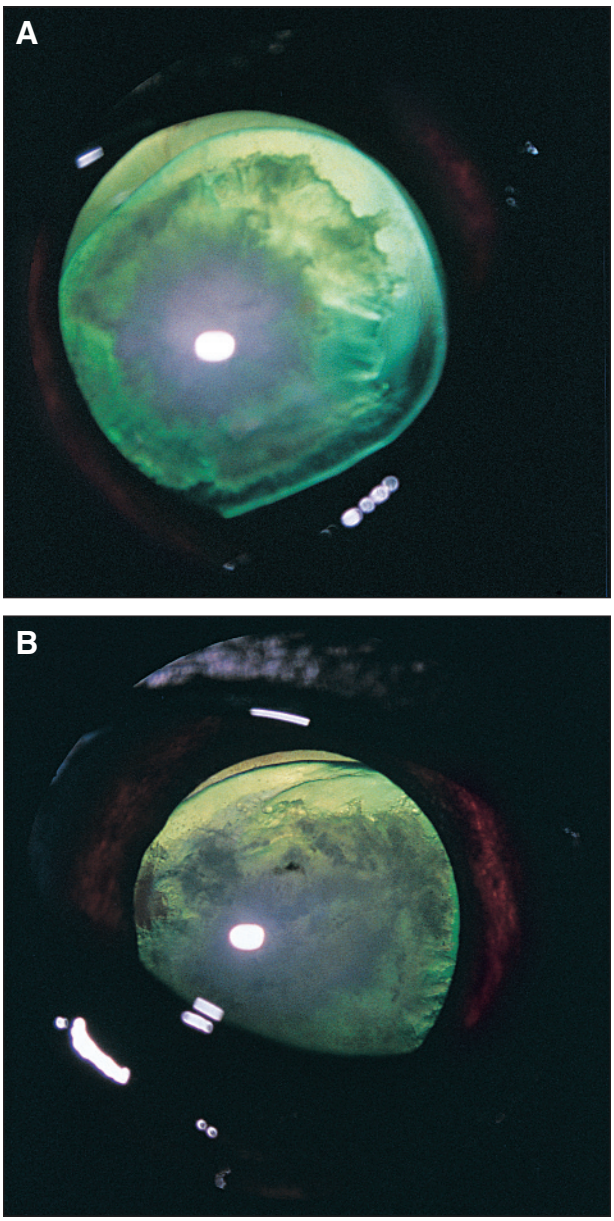

Figure 1A and 1B. Photographs of the anterior segment of the left (A) and right (B) eyes of an 2-year-old, male German shepherd dog.

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mydriatic therapy to enhance vision through the clear areas in the peripheral lens.

Lenticular colobomas are uncommon and infrequently reported (1,2). Colobomas may manifest in a typical position (6 o'clock) or an atypical position (any other location). Lenticular colobomas manifest as a focal notch in the lens equator; the zonules and even the ciliary body may be absent in these regions (3). Lenticular colobomas may be associated with other congenital ocular anomalies, including uveal colobomas. Typical colobomas develop secondary incomplete closure of the optic fissure, and atypical colobomas develop secondary to a lack of tissue induction. Unless the coloboma is extensive and allows phacodonesis, treatment is usually not required.

In our experience, lenticular colobomas are often associated with some form of cataract, either posterior cortical, similar to those noted in Figure 1A and 1B, or nuclear. The nuclear cataracts are usually nonprogressive, and affected dogs often maintain vision. When the cataracts are more extensive and involve the cortex, they often progress, impair vision, and may warrant phacoemulsification. Phacoemulsiftication of a lens with extensive colobomas can be challenging, as vitreous prolapse into the anterior chamber often develops through the coloboma, and elevated intravitreous pressure may be encoutered. An anterior vitrectomy may be required. Most lenticular colobomas are focal, unlike the extensive flattened areas in the lens in Figure 1A and 1B. Lenticular colobomas are devoid of zonules. Extensive lenticular colobomas may predispose to lens luxation, if untreated, or subluxation during lens removal, and they may preclude intracapsular lens implantation after phacoemulsification, necessitating intrapsular lensectomy with ciliary sulcus lens fixation.

References

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